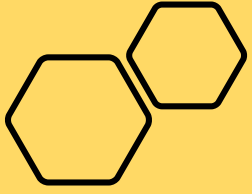




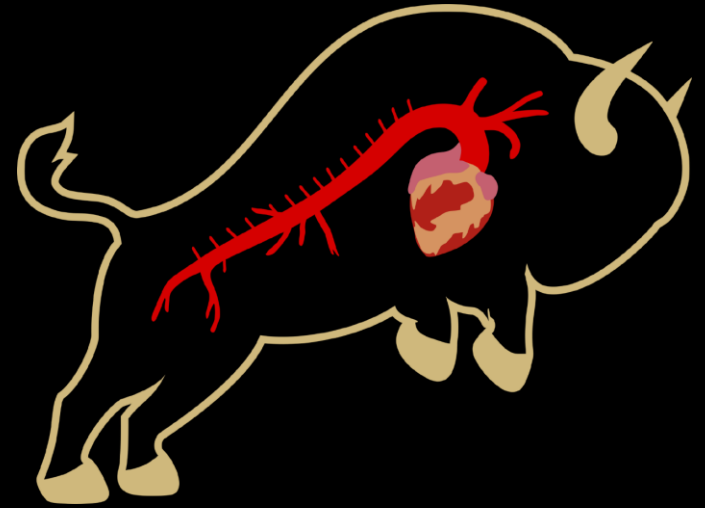
Prior Circulatory Arrest Is Not a Risk Factor for Stroke or Other Adverse Outcomes in Total Arch Replacement

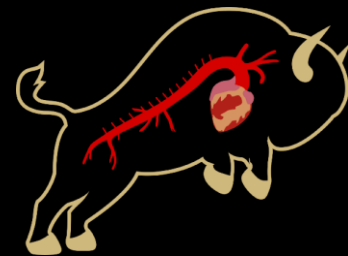
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No disclosures

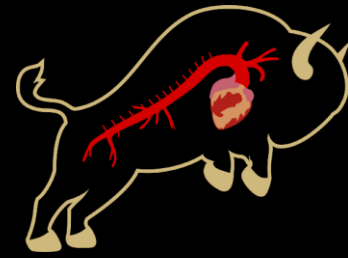




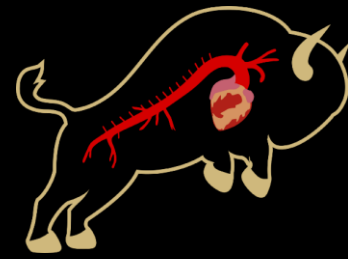
Introduction

- With improvement of management of type A dissection and other pathology, patients are more likely to survive index aortic procedure
- With more surviving patients, more patients developing degeneration of their arch over time
- Unclear if prior circulatory arrest has any impact on ability to tolerate future circulatory arrest

Aim

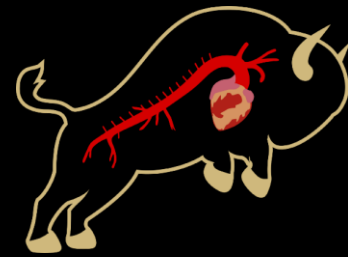


Investigate whether prior aortic procedure requiring circulatory arrest increases risk of stroke or other adverse outcomes in total arch replacement



Methods

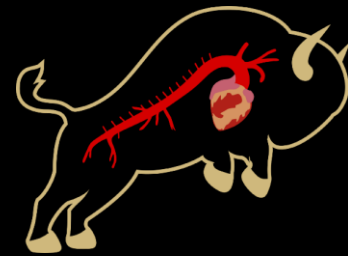
- Retrospective review of a single institution prospective database to identify patients undergoing elective total arch replacement
- Identify patients who had a prior procedure requiring circulatory arrest
- Stratify into two cohorts: Patients with prior arch procedure requiring circulatory arrest, and those without prior arch procedure



Results

- 113 patients identified from 2011-2023 undergoing elective total arch replacement
 - 44 with no prior circulatory arrest procedure
 - 69 with prior arch replacement requiring circulatory arrest
- No difference in pre-operative characteristics, with exception of prior circulatory arrest patients more likely to be younger

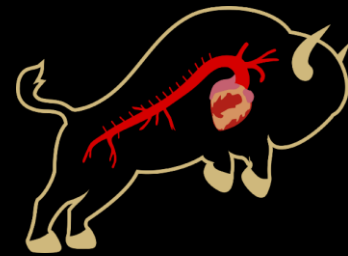
| | No Prior Circulatory Arrest | Prior Circulatory Arrest | p value |
|-----------------------------|-----------------------------|--------------------------|--------------|
| N | 44 | 69 | |
| <u>Preoperative</u> | | | |
| Age | 66.4 (52.5-70.5) | 57.4 (48.1-64.7) | 0.014 |
| Male | 27 (61.4%) | 49 (71.0%) | 0.309 |
| BMI | 27.1 (23.0-29.7) | 27.6 (24.4-31.6) | 0.214 |
| Obesity (BMI>30) | 9 (20.5%) | 19 (27.5%) | 0.504 |
| HLD | 15 (34.1%) | 23 (33.3%) | 0.999 |
| HTN | 32 (72.7%) | 57 (82.6%) | 0.243 |
| Current Smoker | 14 (31.8%) | 11 (15.9%) | 0.063 |
| DM2 | 7 (15.9%) | 4 (5.8%) | 0.105 |
| CKD | 3 (6.8%) | 12 (17.4%) | 0.156 |
| Prior Stroke | 6 (13.6%) | 11 (15.9%) | 0.794 |
| Coronary Artery Disease | 7 (15.9%) | 13 (18.8%) | 0.803 |
| Peripheral Vascular Disease | 5 (11.4%) | 5 (7.2%) | 0.508 |
| Pulmonary Disease | 13 (29.5%) | 16 (23.2%) | 0.511 |



Intraoperative Results

- Increased cardiopulmonary bypass time in re-do arches
 - No difference in cross-clamp duration, trend towards increased circulatory arrest duration, but non-significant
- More administration of coagulation products (FFP & platelets) in re-do arches

| | No Prior Circulatory Arrest | Prior Circulatory Arrest | p value |
|--|-----------------------------|--------------------------|--------------|
| N | 44 | 69 | |
| <u>Cardiopulmonary Bypass Statistics</u> | | | |
| Nadir Bladder Temp | 26.1 (23.8-27.9) | 26.7 (23.8-27.8) | 0.731 |
| Cardiopulmonary Bypass Time | 154 (132-193) | 191 (156-223) | 0.001 |
| Aortic Cross Clamp Time | 86 (48-125) | 81 (60-130) | 0.711 |
| Circulatory Arrest Time | 19.5 (15-28) | 23 (18-32) | 0.058 |
| <u>Intraoperative Product (units)</u> | | | |
| Packed Red Blood Cells | 3 (0-4) | 3 (1-6) | 0.181 |
| Fresh Frozen Plasma | 4 (2-5) | 5 (3-8) | 0.023 |
| Platelets | 2 (1-2) | 2 (2-3) | 0.005 |



Post-operative Results

- No difference in post-operative outcomes including length of stay between the two cohorts
 - Importantly, almost no difference between two cohorts regarding stroke risk

| | No Prior Circulatory Arrest | Prior Circulatory Arrest | p value |
|--------------------------------|-----------------------------|--------------------------|---------|
| N | 44 | 69 | |
| <u>Postoperative</u> | | | |
| Length of Stay | 9 (7-15) | 10 (8-16) | 0.272 |
| ICU Length of Stay | 4 (3-5) | 4 (3-7) | 0.715 |
| Re-operation for Bleeding | 3 (6.8%) | 8 (10.7%) | 0.524 |
| Stroke | 5 (11.4%) | 8 (11.6%) | 0.999 |
| New Renal Replacement Therapy | 4 (9.1%) | 3 (4.3%) | 0.428 |
| Prolonged Ventilation (>48 hr) | 4 (9.1%) | 12 (17.4%) | 0.275 |
| Infection | 2 (4.5%) | 10 (14.5%) | 0.123 |
| Arrhythmia | 8 (18.2%) | 11 (15.9%) | 0.799 |
| Mortality | 4 (9.1%) | 6 (8.7%) | 0.999 |



Conclusions

- Prior arch procedure requiring circulatory arrest does not increase adverse outcomes in patients undergoing repeat circulatory arrest during elective total arch replacement
- Increased cardiopulmonary bypass times, intra-operative administration of coagulation products, likely related to scar tissue from prior surgery
- Patients and providers should be reassured that prior aortic arch surgery does not increase risk of stroke or other adverse outcomes in total arch surgery

Questions???

